MAGELLAN MISSION REPORT: THE FINAL CHAPTER

Thomas W. Thompson, R Stephen Saunders, William L,. Sjogren,
Douglas G. Griffith and Magellan Flight Team
Jet Propulsion Laboratory, California Institute of Technology
Mail-Stop 300-227, 4800 Oak Grove Drive,
Pasadena, California 91109, United States of America
phone (818) 354-3881, Fax (818) 393-5285
c-mail: thomas.w.thompson@jpl.nasa.gov

The Magellan spacecraft which had been orbiting Venus **since August 10, 1990** was deliberately destroyed by plunging it into the Venusian atmosphere on October 12, 1994. Magellan had the objectives of (1) improving the knowledge of the geological processes, surface properties and geologic history of **Venus by analysis of surface radar characteristics, topography and morphology as well as (2) improving the knowledge of the geophysics of Venus by analysis of Venusian gravity.**

The first objective of improving the knowledge of the geological processes, surface properties and geologic history of Venus was supported by radar imaging, altimetric and radio metric mapping of the Venusian surface from September 1990 until September 1992 (mission cycles 1,2,3). Some 98 percent of the surface has been mapped with radar resolution on the order of 12.0 meters. Over 1200 radar image products are available as analog photographs and digital compact disks (CD-ROMs) **at** the **National** Space Science Data Center (NSSDC), Goddard Space Flight Center, Greenbelt, Maryland. In addition, the altimetric and radiometric data products from MIT and the cartographic maps from USGS arc available at the NSSDC. A world-wide contact for these Magellan radar data products is the PDS Geosciences Node at Washington University, St. Louis, Missouri (e-mail: slavney@wurider.wustl.edu).

The **second** objective of improving the knowledge of the geophysics of Venus by analysis of Venusian gravity was supported by high resolution Doppler tracking of the spacecraft from September 1992 through October 1994 (mission cycles 4,5,6). Some 950 orbits of high-resolution tracking data were obtained between September 1992 and May 1993 while Magellan was in an elliptical orbit with a periapsis near 175 kilometers and an appoapsis near 8,000 kilometers. An additional 1500 orbits were obtained after orbit-circularization in mid-1993. This Doppler tracking data has yielded a 90-by -90-degree harmonic gravity field, while processing to a 12,t)-by-]20-degree gravity field is planned for 1996.

Magellan has also provided information about the Venusian atmosphere. The high effective power of the Magellan downlink radio system enabled the deepest probing of the Venusian atmosphere by occultation. Also, atmospheric drag measurements, particularly during aerobraking and in this October's final plunge into the Venusian **atmosphere, have expanded upon those originally obtained with the Pioneer-** Venus **spacecraft and have** validated the Venus International Reference Atmosphere (VIRA).